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Dormant Turfgrass Paint and Glyphosate Application Timing Effects on Annual Bluegrass and Tall Fescue Control

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Abstract

Excellent annual bluegrass control can be achieved with dormant glyphosate and glyphosate + Endurant treatments applied November through February. The addition of Endurant to glyphosate in early applications (November and December) increases tall fescue control.

Keywords

turfgrass, dormant turfgrass paint, glyphosate, Endurant, tall fescue, annual bluegrass, Poa annua L., Schedonorus arundinaceus Schreb., zoysia; spring greenup, Meyer zoysiagrass, Z. japonica Steud.

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Dormant Turfgrass Paint and Glyphosate Application Timing Effects on Annual Bluegrass and Tall Fescue Control

Jared Hoyle and Jake Reeves

Summary. Excellent annual bluegrass control can be achieved with dormant glyphosate and glyphosate + Endurant treatments applied November through February. The addition of Endurant to glyphosate in early applications (November and December) increases tall fescue control.

Rationale. Turfgrass managers commonly apply glyphosate on dormant zoysiagrass (*Zoysia* spp.) to control cool-season grassy weeds. Recently, turfgrass managers began using paints and pigments to color dormant zoysiagrass throughout winter months. Applications of glyphosate and paint on dormant zoysiagrass are well documented, but information concerning the interaction of glyphosate and paint applications is lacking.

Objectives. Evaluate the effects of glyphosate and glyphosate + Endurant (turfgrass colorant) application timing for annual bluegrass (*Poa annua* L.) or tall fescue (*Schedonorus arundinaceus* Schreb.) control and zoysiagrass spring greenup.

Study Description. Experiments were initiated in fall of 2013 at Colbert Hills Golf Course (CH) and Stagg Hill Golf Course (SH) in Manhattan, Kansas. Research at both locations was performed on a 'Meyer' zoysiagrass (*Z. japonica* Steud.) fairway. Research areas at CH and SH were maintained at 1.3 cm and 1.9 cm mowing height, respectively. At trial initiation November 18, 2013, CH contained approximately 50% tall fescue cover, and SH contained 35% annual bluegrass cover. Oxadiazon (3 kg ha^{-1}) was applied to each research area to prevent further annual bluegrass emergence. Treatments were arranged in a 2 x 4 factorial, randomized complete block

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design with four replications. Factors were two herbicide combinations and four application timings. Herbicide applications included glyphosate (1.1 kg ha^{-1}) and glyphosate (1.1 kg ha^{-1}) + Endurant (16.6% v/v). An untreated check was included for comparison. Application timings were November 18 and December 19, 2013, and January 18 and February 18, 2014. Data were collected biweekly until June 2, 2014 [196 days after initial application (DAI)]. Data included visual percent annual bluegrass or tall fescue cover and visual percent green zoysiagrass. Analysis of variance was performed in SAS (SAS Institute Inc., Cary, North Carolina), and means were separated according to Fisher's Protected LSD at 0.05 significance level.

Results. Glyphosate and glyphosate + Endurant applications at any timing did not delay spring zoysiagrass greenup at SH and CH. All treatments and application timings at SH, excluding the untreated control, resulted in 0% annual bluegrass cover by April 18, 2014 (Figures 1 and 2). Glyphosate + Endurant applications in November and December resulted in 0 and 1% tall fescue cover, respectively by June 16, 2014 (Figure 3). No differences were observed in test areas on June 16, 2014, in tall fescue control between glyphosate and glyphosate + Endurant applied in January or February. Results demonstrate that the addition of Endurant to glyphosate at early applications (November and December) increased tall fescue control.

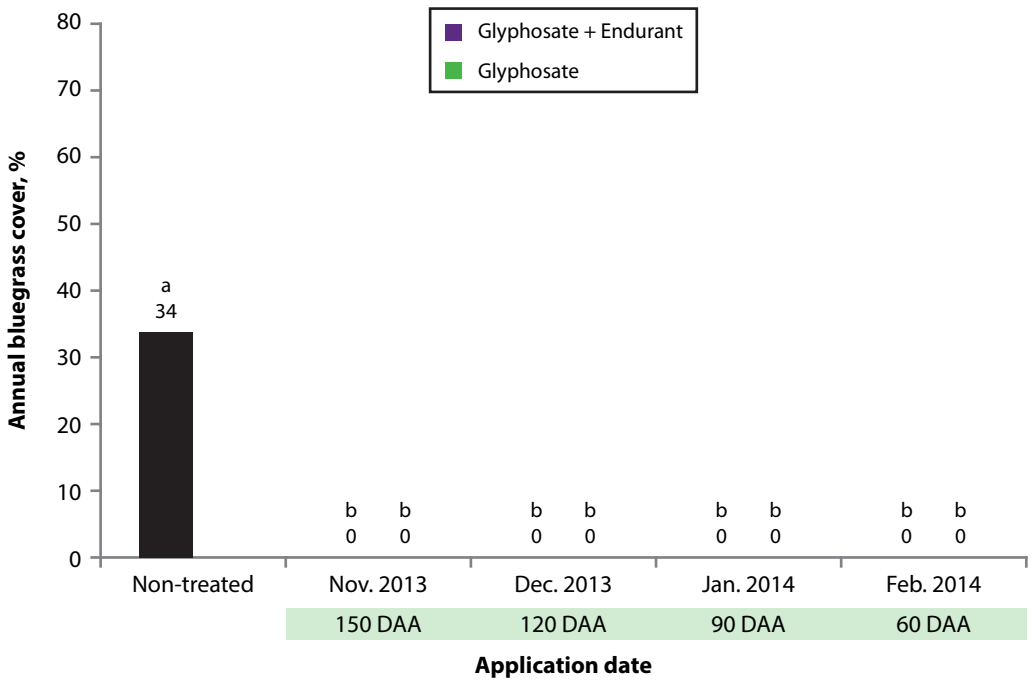

Figure 1. Effect of Dormant Glyphosate and Paint Applications on Annual Bluegrass Populations

Abbreviations: days after application, DAA. Glyphosate applied at 1.1 kg ha^{-1}; Endurant applied at 16.6% v/v. Means separated according to Fisher's Protected LSD at P=0.05.

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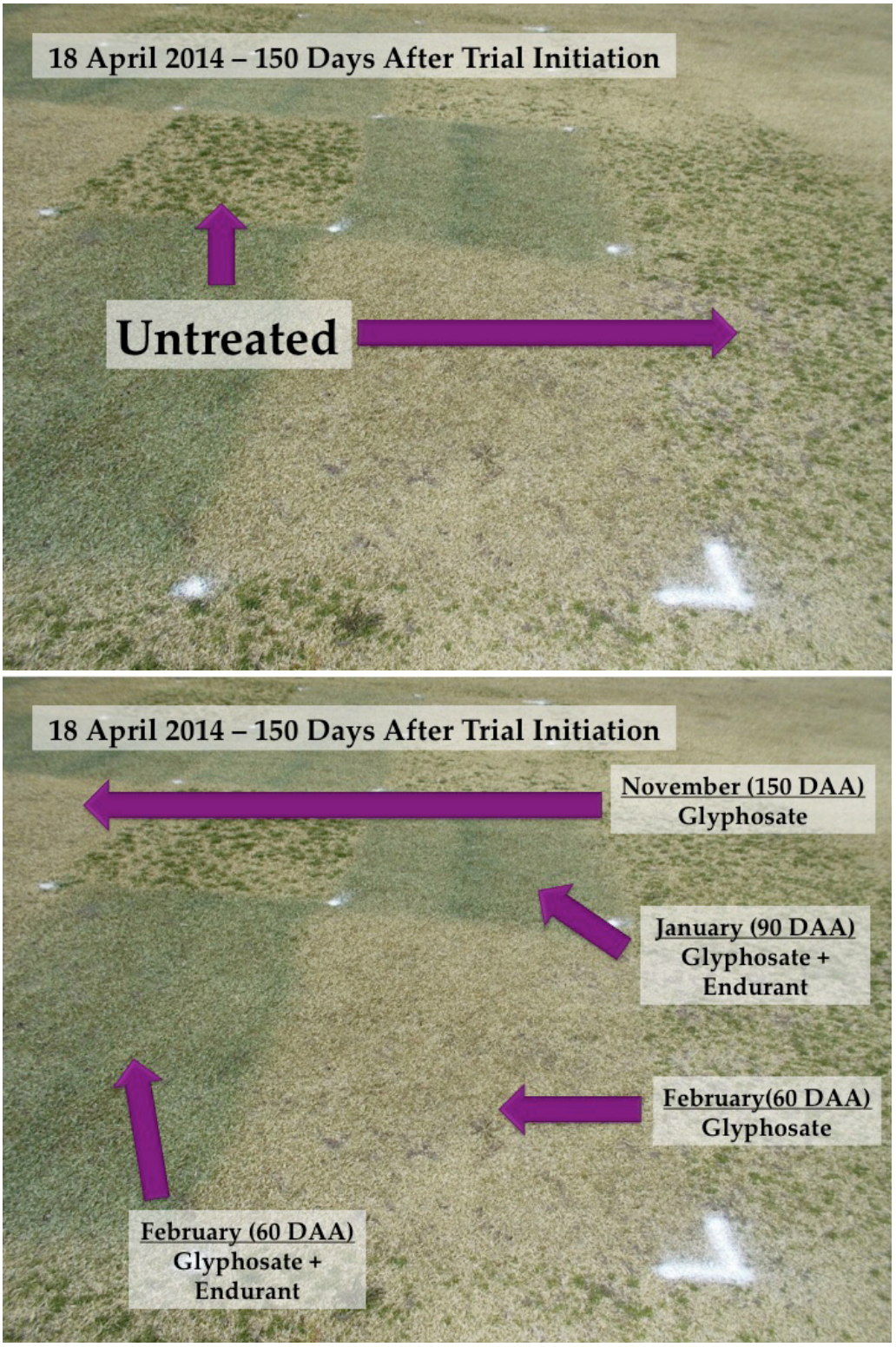

Figure 2. Top: Annual bluegrass populations present in untreated areas, 150 days after trial initiation. Bottom: Effective annual bluegrass control with glyphosate and glyphosate + Endurant applications in November, January, and February.

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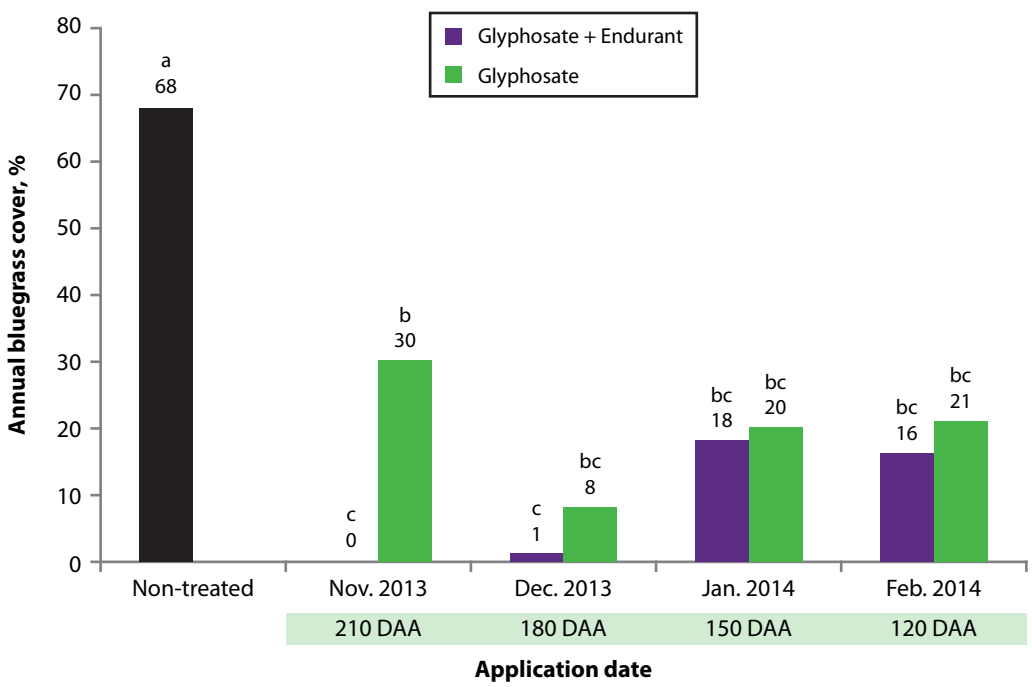

Figure 3. Effect of dormant glyphosate and paint applications on tall fescue populations
Abbreviations: days after application, DAA. Glyphosate applied at 1.1 kg ha^{-1}; Endurant applied at 16.6% v/v. Means separated according to Fisher's Protected LSD at P=0.05.

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